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| 10/563,437 | 01/05/2006 | Takemori Takayama | 2005_2071A | 4545 |

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| EXAMINER | |
|---|---|
| YEE, DEBORAH | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1793 | |

| NOTIFICATION DATE | DELIVERY MODE |
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| 03/01/2010 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/563,437 | TAKAYAMA ET AL. | |
| | Examiner | Art Unit | |
| | Deborah Yee | 1793 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,3,15-26,28-30 and 32-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,15-26,28-30 and 32-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: In specification, the term “splay” is a misspelling and should be ---spray---. For example, see line 2 on page 2 and line 1 on page 3.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 3, 15 to 20, 22 to 26, 28 to 30 and 33 to 35 and 38 to 39, 42, and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 22, 33, 38, 39, 42 and 43 are indefinite because they recite “recesses” which can be either open or close, and does not clearly define the invention. According to Applicant’s specification on page 21, the first full paragraph indicates recesses are closed because they are oil pockets like pores and are closed by retaining lubricant. Therefore to add clarity, it is recommended to amend claims to recite --closed recesses---.

5. The recitation “at least one of closed pores and recesses” in other claims is indefinite because it is uncertain whether the term "closed" refers to both pore and

recess. To clearly define the invention, it is recommended to use language such as – closed pores and closed recesses--.

6. In claim 3, there is no antecedent basis for "said ferrous sintered sliding material".

### *Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3, 15, 16,18, 19, 20, 21 to 26, 28 to 30, 32, 33, 35, 36 and 37 to 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 02138442 ("JP-442") in view of Japanese patent 08-109450 ("JP-450") for the reasons set forth in office action dated July 16, 2009.

9. Claims 1, 3, 15, 16,18, 19, 20, 21 to 26, 28 to 30, 32, 33, 35, 36 and 37 to 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 7,297,177 ("Sandberg-177") ") or US Patent 5,936,169 ("Pinnow") in view of English abstract of Japanese patent 08-109450 ("JP-450"), Japanese patent 363262402 ("JP-402") or Japanese patent 360050151("JP-151") for the reasons set forth in office action dated July 16, 2009.

10. Claims 1, 3 and 16 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Reference AO ("NPL") cited by Applicant in IDS filed January 5, 2006 for the

reasons set forth in office action dated July 16, 2009 and further in view of Japanese patent 08-109450 ("JP-450").

11. Prior art rejections in paragraph 8 and 9 are further rejected in view of US Patent 5,328,772 ("Tanaka"), US Patent 5,675,201 ("Komura") or US Patent 3,424,503 ("Schulz").

12. Primary prior art teaches using high abrasion wear sintered sliding material as a protective surface for floating seal or bearing in machine component.

13. Even though a back metal hardness of at least HV 170 recited in the claims is not taught by primary prior art, such difference would not be a patentable merit since said hardness level is standard and conventional for bearing application as evident by table 1 of columns 7-8 in Tanaka and hence would expected or obvious to incorporate.

14. Even though structural limitations for floating seal or bearing as recited by claims is not taught by primary prior art, such difference would not be a patentable merit since said limitations are conventional and known in the art and would be expected or obvious to incorporate. Note Schulz teaches a thrust bearing comprising a cylindrical member and a collar at one end with bushing fixedly mounted at an inner surface of cylindrical member, said bushing being made of porous sintered material which retains lubricant. In addition, Komura in figure 2A shows a thrust bearing body which incorporate air vents (101) and grooves (6).

15. Prior art does not teach ferrous sintered sliding body having a thickness of at least 0.5 mm as recited by one or more claims. It would, however, be a matter of routine

optimization to select thickness of sintered surface depending on its application and level of exposed wear.

***Response to Arguments***

16. Applicant's arguments filed January 11, 2010 have been fully considered but they are not persuasive.

17. It was argued that none of the prior art of record discloses the ferrous sintered sliding body being formed with at least one of closed pores and recesses on the sliding surface in an area ratio of 1 to 10%; and it would not be obvious to modify primary prior art in view of JP-450. Applicant stated that JP-450 controls closed pore for a different reason than present invention, and therefore one skilled in the art would not arrive at closed pore in an area ratio of 1 to 10%. As discussed in the specification of the present application, the area ratio range required by claim 1 allows the sliding member to discharge gas generated during bonding to the back metal, and also allows the sliding member to hold oil pockets so as to improve heat crack resistance. In contrast, JP-450 teaches improve lubrication and abrasion resistance.

18. In response to argument, it is the Examiner's position that JP-450 teaches a sliding member having a closed pore range of 8 to 30% which overlaps and teaches a portion of Applicant's range of 1 to 10%. Also JP-450 in paragraph [0008] uses pores as oil-contained pockets that lubricant sliding surface without loss of abrasion resistance which is similar to one of the reasons Applicant controls closed pores. Note, second full paragraph on page 68 of instant specification teaches closing pores to improve lubricating ability to sliding surface but is limited because a large content causes

embrittlement; and first full paragraph on page 21 teaches closing pores and recesses to prevent heat cracking which is the end result that occurs when surface is not sufficiently lubricated. Since lubricating wear resistant surface is common practiced and would be desirable for primary prior art utility, then it would be obvious modification well within the skill of the artisan to incorporate closed pore or recess limitation to primary prior art in view of JP-450.

19. In regard NPL, it would also be obvious to apply sintered sliding surface with closed pores in view of JP-450 to lubricant sliding surface.

20. Applicant argued that Sandberg'177 discloses a steel article which is not sintered but instead produced by using a molten metal spray. In contrast, claim 1 requires a ferrous sintered sliding body. As is well known in the art, a sintered metal article has a different structure from metal articles produced using other methods.

21. In response to argument, it is the Examiner's position that Sandberg'177 teaches a sintered metal article rather than a thermal metal sprayed article. See lines 28 to 62 of column 4 and claim 8 of column 9 wherein powder is manufactured by nitrogen gas atomization followed by subjecting powder to hot isostatic pressing (sintering) to form a consolidated body.

22. Applicant argued that prior art rejections, each contain an assertion that certain properties "would be expected since composition and process of making by sinter bonding are closely met and in absence of evidence to the contrary. Applicant is unaware of any authority established by the MPEP or case law which allows for a

claimed limitation to be addressed merely by saying it would be "expected" to be present in prior art because the prior art discloses a similar composition and process.

23. In response to argument, it has been well settled that when the claimed and prior art products are substantially identical in structure or composition or produced by substantially identical processes, a prima facie case of obviousness is established and the burden falls to the Applicant to show that alloy of the cited product does not necessarily or inherently possess characteristics attributed to the claimed product. See MPEP 2112.01 and In re Best, 195USPQ, 430.

24. Therefore, for example, Sandberg'177 in claims 1 to 18 teach a sintered ferrous sliding body having composition with constituents and carbides in ranges that overlap and suggest the present invention. In addition prior art steel contains 0.4 to 0.6% solid solution carbide within the claimed range of 0.15 to 0.5%. Although prior art alloy does not teach pore size of 0.03 to 3 mm, such property would be expected since composition, microstructure and process of making by sintering are taught, and in absence of evidence to contrary. Note Applicant has not shown any factual evidence that the alloy composition is critical and alloys of cited references would not inherently possess the claimed properties.

25. Applicant's arguments, with respect to rejection over WO/2002/070769 ("Sandberg") have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. Sandberg teaches a thermal sprayed product which has a different structure from the claimed sintered product.

26. The obvious-type double patenting rejection over copending application Nos. 11/071,469 and 11/108749 has been withdrawn in view of Applicant's newly amended claims which recite a closed pore or closed recess limitation.

***Allowable Subject Matter***

27. Claims 17 and 34 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

28. The following is an examiner's statement of reasons for allowance: A sintered sliding member comprising a back metal and a ferrous sintered sliding body, the ferrous sintered sliding body being connected to the back metal, wherein said ferrous sintered sliding body comprises martensite phase containing retained austenite phased dispersed therein in a content of 5 to 40 vol. % as recited by claims 17 and 34 is not taught or fairly suggested by the art of record.

29. The art of record discloses a martensitic microstructure but no retained austenite. In contrast, present invention on page 53 requires 5 to 40 vol. % retained austenite with martensite in order to improve the conformability so as to ensure seizing resistance.

30. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/
Primary Examiner
Art Unit 1793

/DY/